35981
S/109/62/007/004/002/018
D230/D302

9,9600

AUTHOR: Khaskind, M.D.

TITLE: Radiowave reflection from inclined meteor traces

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 4, 1962, 590 - 600

TEXT: Investigation of the scattered waves when plane e.m. waves are incident upon an ionized meteor trace at an arbitrary angle with its axis. Short wave approximation: 1) Concrete data are given for the ionized meteor traces. The formation of meteor traces is examined under conditions of diffused anisotropy which can take place at heights of 100 km or higher, under the action of the geomagnetic field: In conditions of diffused anisotropy the duration of the reflected signal depends on the vector-direction of the incident waves, the orientation of the meteor trace with respect to the lines of force of the geomagnetic field and values of the longitudinal and transverse diffusion coefficients. In the initial stages of formation of the meteor trace the scattered field outside the plane of incidence has two components: The first of these determi-
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Radiowave reflection from inclined ... D230/D302

nes the Doppler frequency change independent of the lines of force of the geomagnetic field, the second has the usual exponentially-decreasing amplitude in this approximation. It follows that the character of the reflected signals in the initial stages of formation of the meteor trace and that for the formed ionized trace of large dimensions are completely different. 2) Long-wave approximation: Meteor traces with sufficiently-high linear electron concentration are examined; in this case the scattered waves are similar to those from an ideally-conducting cylinder. Analyses of scattered waves were also made separately for transverse-magnetic and transverse-electric polarizations. The full configuration of the solution was obtained by means of special e.m. potentials of axially-symmetrical plasma, for which a common equation system was found. The limiting conditions of these potentials are examined. There are 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc.

SUBMITTED: July 6, 1961

Card 2/2

AP4046681

M. D. (deceased); Vaynshteyn

wave diffraction by slit and tape

tekhnika i elektronika

diffraction, plane wave diffraction, slit, tape

parallel to the tape, is offered. ... developed field (14) in the remote zone ... principle ... in the plane of slit or tape ... radiation and observation. The ...

AP4 4... 30

... approximated by Fresnel ...

... where $\lambda = 2\pi / k$ is the ... width of

The above asymptotic formulas have a ... similar to that

... formula (ZhTF, 1958, 28, ... be

... (54) developed by H. ... 9,

... zed. Self-sustained ... are

... has 88 formulas

... elektrotekhnicheskiy ... Electro-

... Communications), Institut ... AN SSSR

... Problems, AN SSSR)

... May 4

NO REF SOV: ... OTHER ...

[illegible]

Ref. zh. Fizika, Abs. 8Zh118

AUTHOR: Khaskind, M. D.

ORG: none

TITLE: On the short-wave approximation in the theory of diffraction and radiation

CITED SOURCE: Tr. uchebn. in-tov svyazi. M-vo svyazi SSSR, vyp. 22, 1964, 13-23

TOPIC TAGS: electromagnetic wave diffraction, electromagnetic wave scattering, approximation method, scattering cross section

TRANSLATION: The author considers radiation and scattering of electromagnetic waves [illegible] surfaces and presents an analysis of the short-wave approximation under [illegible] premises. Methods of calculating the second Kirchhoff approximation [illegible] the differential [illegible] scattering by cylindrical surfaces are [illegible]

SUB CODE: 20

Card 1/1

L 07350-67 EWT(d)/EWT(m)/EWP(f)/EWP(v)/EWP(k)/EWP(h)/EWP(l) DJ

ACC NR: AP6012166 SOURCE CODE: UR/0413/66/000/007/0091/0091

AUTHORS: Brodskiy, S. I.; Zaydel', I. N.; Khaskovich, L. L.

45
B

ORG: none

TITLE: A remote control vacuum valve. Class 47, No. 180442

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 7, 1966, 91

TOPIC TAGS: vacuum technology, valve, remote control system

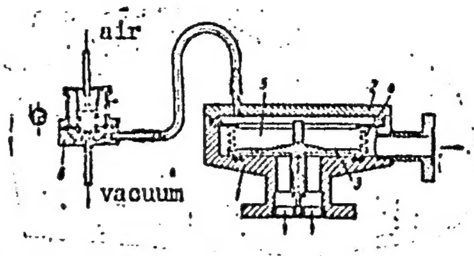
ABSTRACT: This Author Certificate presents a remote control vacuum valve containing a case, a lid, and a spring-loaded plate with a bellows connection. To simplify its construction and control and to make certain that the time of opening exceeds the time of closing, the valve is provided with a sealed opening formed by the lid, the bellows, and the plate (see Fig. 1). This opening is connected by a pipe to a distributor so that the opening is always in contact either with the compressed air or with the vacuum ducts.

Card 1/2 UDC: 621.646.247-519

L 07350-67

ACC NR: AP6012166

Fig. 1. 1 - valve case; 2 - lid;
3 - plate; 4 - bellows;
5 - sealed opening;
6 - distributor



Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 05Apr63

Card 2/2 afs

EWT(m)/EWP(t)/EWP(b) JD

AP5007468 0099/0099

Brodskiy, S. I.; Khaskovich, L. L.

A device for applying plating in a vacuum. 168575

Byulleten' izobreteniy i tovarnykh znakov

vacuum plating, plating

This Author Certificate present ... a device (see Fig. 1 on the ... several chambers and provided ... chambers and a centralized vacuum ... The installation is provided ... valves ... by a vacuum unit) and with ... increase the force needed for ... the power ... of the electromagnets a capacit... included in the circuit of the power ... figure.

none

VOLKONSKIY, B.V.; KHASKOVSKAYA, A.P.

Some structural and mineralogical characteristics of Portland cement Klinkers. Trudy Giprotsement no. 21:44-55 '59.
(MIRA 13:12)

(Cement clinkers)

KHASLAVSKAYA, I.N.

Rheumatic fever control in children according to materials form an Omsk Railway children's hospital. Vop.okh.mat. i det. 2 no.1:80 Ja-F '57. (MIRA 10:2)

1. Iz kafedry gospital'noy pediatrii i propedevtiki detskikh bolesney Omskogo gosudarstvennogo meditsinskogo instituta.
(RHEUMATIC FEVER)

MARIUPOL'SKAYA, T.L.,prof.; SKOL'SKAYA, N.O.,dotsent; KHASLAVSKAYA, I.N.
vrach.

Results of prednisone and prednisolone treatment of rheumatic fever in children. Vop.okh.mat. i det. 8 no.2:49-54 F'63.
(MIRA 16:7)

1. Iz kafedry gospital'noy pediatrii (zav. - prof. T.L. Mariupol'skaya) Omskogo meditsinskogo instituta.
(RHEUMATIC FEVER) (PREGNADIENETRIONE)
(PREGNADIENEDIONE)

KHASLIN, G.A.; SHVED, F.I.; DOLININ, D.P.; SAVENOK, L.L.; VEKSLER, G.D.

Effect of electric conditions on the conditions of metal crystallization during vacuum arc remelting. Izv. vys. ucheb. zav.; chern. met. 8 no.1:43-49 '65 (MIRA 18:1)

1. Zlatoustovskiy metallurgicheskiy zavod i Chelyabinskiy nauchno-issledovatel'skiy institut metallurgii.

KHASMAMEDOV, F.I.

Use of tubular furnaces for temperature regulation. Izv. AN Azerb. SSR. Ser.fiz.-mat. i tekh.nauk no.5:105-116 '61. (MIRA 15:2)
(Automatic control) (Furnaces)

KHASMAMEDOV, T. K.

KHASMAMEDOV, T. K.- "On the Quality of Physics Textbooks in the Azerbaijan Language for Middle School and on the Systematization of Physics Terminology." Min of Education Azerbaijan SSR, Azerbaijan State Pedagogical Inst imeni V. I. Lenin, Baku, 1955 (Dissertations for the Degree of Candidate of Pedagogical Sciences)

SO: Knizhnaya Letopis' No. 26, June 1955, Moscow

Khasmamedov, T.

Category : USSR/General Problems - Problems of Teaching A-3

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 70

Author : Khasmamedov, T., Osipov, S.
Title : On the Methods of Physical-Experiment Performance in Middle Schools

Orig Pub : Azerb. mektebi, 1956, No 5, 38-54

Abstract : No abstract

Card : 1/1

UCHITEL', I.Ya.; KHASMAN, E.L.; KARNOZ, G.V.

Role of endogenic pyrogen in immunogenesis. Report No.1: Effect of endogenic pyrogen on the formation of antibodies and the intensity of protein synthesis in the body. Zhur. mikrobiol., epid. i immun. 42 no.10:3-7 O '65. (MIRA 18:11)

1. Institut epidemiologii i mikrobiologii imeni Gamalei AMN SSSR, Moskva. Submitted September 3, 1964.

KHASMAN, E.L.

Intensity of synthesis of nonspecific proteins in the body at various periods following introduction of typhoid fever vaccine. Zhur. mikrobiol., epid. i immun. 41 no.1:17-22 Ja '64. (MIRA 18:2)

1. Institut khirurgii imeni Vishnevskogo AMN SSSR, Moskva.

KHASMAN, E.L.

Intensity of the synthesis of nonspecific proteins in the body under the effect of the lipopolysaccharide complex from typhoid bacilli. Biul.eksp.biol.i med. 58 no.10:59-62 O '64.
(MIRA 18:12)

1. Otdel rikkotsizov (zav. - deystvitel'nyy chlen AMN SSSR prof. Zdrodovskiy) Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR, Moskva. Submitted July 22, 1963.

UCHITEL', I.Ya.; KHASMAN, E.L.; KONIKOVA, A.S.

Intensity of synthesis of proteins of the body during the induction phase of the formation of typhoid agglutinins. Zhur.mikrobiol.epid. i immun. 32 no.1:17-22 Ja '61. (MIRA 14:6)

1. Iz Instituta khirurgii imeni Vishnevskogo AMN SSSR.
(TYPHOID FEVER) (PROTEIN METABOLISM) (AGGLUTININS)

UCHITEL', I.Ya.; KHASMAN, E.L.

Mechanism of the adjuvant activity of nonspecific stimulants of antibody formation. Vest. AMN SSSR 19 no.3:23-37 '64.
(MIRA 17:10)

1. Institut epidemiologii i mikrobiologii AMN SSSR imeni Gamalei, Moskva.

GORBACHEVSKIY, Viktor Andreyevich; LESHKEVICH, Andrey Ivanovich; MIKHAYLOVSKIY, Yuriy Vsevolodovich; SHESTAKOV, Boris Aleksandrovich; MEDNIKOV, I.N., retsenzent; MOROZOV, K.P., retsenzent; KHASMAN, P.Ya., otv. red.; PLESKO, Ye.P., red.; GRECHISHCHEVA, Z.I., tekhn. red.

[Fundamentals of lumbering and the operation of machines and mechanisms] Osnovy lesozagotovok i ekspluatatsiia mashin i mekhanizmov. V.A.Gorbachevskii i dr. Moskva, Goslesbumizdat, 1961. 319 p. (MIRA 15:2)
(Lumbering—Machinery)

KHASMAMEDOV, F.I., kand. tekhn. nauk

Automatic control of tubular furnaces. Mekh. i avt.proizv. 18 no.8:5-7 Ag '64. (MIRA 17:10)

SOBOLEV, V.; KHAS'MINOY, I.

Special features of the organization of production and work in the manufacture of enameled dishware. Biul.nauch.inform.; trud i zar.plata 3 no.6:31-33 '60. (MIRA 13:6)
(Zaporzh'ye--Enameled ware) (Time study)

(Russian)

SOV/52-2-4-7/7

A Summary of Papers Presented at the Sessions of the Scientific Research Seminar on the Theory of Probabilities. Moscow, Feb-May 1957.
Teoriya Veroyatnostey i yeye Primeneniya, 1957, v. 2, No. 4, pp. 478-488.

Khas'minskiy, R.Z., A probability approach to boundary problems for elliptic and parabolic equations. Let the equation

$$\frac{\partial u}{\partial t} = a(x,t)\frac{\partial^2 u}{\partial x^2} + b(x,t)\frac{\partial u}{\partial x} \qquad \text{(Eq.1)}$$

be given in a domain D bounded by the straight lines $x = 0$, $x = l$; $t = 0$, $t = T$. It is supposed that inside the domain D the coefficients a and b have three continuous derivatives with respect to both their arguments and $a(x,t) > 0$ and near the boundary $x = 0$ $b(x,t)$ and $a(x,t)$ may be unbounded and $a(x,t)$ tends to 0. The following question is studied. When is it necessary to give the boundary conditions for the first boundary problem at $x = 0$. A similar question for elliptic equations has been studied in Refs.1, 2 and 3. The condition is studied under which there is a unique solution of Eq.1 taking given values of the boundary $x = 0$: $t = 0$

Card ~~1/1~~ 1/2

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721910012-8"

SOV/52-2-4-7/7

A Summary of Papers Presented at the Sessions of the Scientific Research Seminar on the Theory of Probabilities.

and $x = l$. If this condition is not fulfilled, then there is a unique solution of Eq.1 taking given values at $t = 0$ and $x = l$.
Yaglom, A.M., Generalized locally homogeneous stochastic fields. The contents of this paper have been published in Vol.2, Nr.3 of this journal. Seregin, L.V., Continuity conditions with unit probability of strictly Markov processes. The results are to be published in this journal. Yushkevich, A.A., Strong Markov processes. The results were published in Vol.2, Nr.2 of this journal. Tikhomirov, V., On ε-entropy for certain classes of analytic functions. The contents of this report have been published in Doklady Akademii Nauk, Vol.117, Nr.2, 1957, p.191. Urbanik, K., (Wrocław), Generalised distributions at a point of generalised stochastic processes. The generalised stochastic processes are of finite order, i.e. are generalised derivatives of continuous processes. It is proved that the distribution at a point of a generalised process is uniquely defined. Girsanov, I.V., Strongly

Card ~~3/11~~ 2/2

SOV/52-3-4-5/11

AUTHOR: Khas'minskiy, R.Z. (Moscow)

TITLE: Diffusion Processes and Elliptic Equations Degenerating at the Boundary of the Region (Diffuzionnyye protsessy i ellipticheskiye differentsial'nyye uravneniya, vyrozhdayushchiyesya na granitse oblasti)

PERIODICAL: Teoriya Veroyatnostey i Yeye Primeneniya, 1958, Vol 3, Nr 4, pp 430 - 451 (USSR)

ABSTRACT: In Ref 1 was solved the problem of posing the first boundary value problem for a certain class of elliptic equations degenerating on the parabolic boundaries of a domain in such a way as to obtain a unique solution satisfying the boundary conditions. These investigations were continued in Refs 2 and 3 but in each of the references it was assumed that only the coefficients of the second derivatives tond to zero and that this degeneration obeys a power law. In this paper degeneration is considered without any restriction on the order of the power and other coefficients are allowed to degenerate in the sense of becoming unbounded. For simplicity of formulation only the case of two variables is considered. A probability formulation for the solution of the first boundary value

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Diffusion Processes and Elliptic Equations Degenerating at the Boundary of the Region

problem of a general linear elliptic equation without degeneration is given. Then the concepts introduced in Ref 12 of attracting and repulsing boundaries are generalised to the multi-dimensional case and effective sufficient conditions are given in terms of the coefficients of the equation for these types of boundaries. The limiting behaviour of X_t as $t \to \tau$ is studied and sufficient conditions are given for the various possibilities in the first boundary problem for Eq (2). These conditions generalise the results of Ref 1. Next, the behaviour of a process X_t is analysed in the case when the segment of the boundary is unattainable. An example is now discussed which shows that when the important condition (H) is not satisfied the trajectory X_t can have a discontinuity of the second order for $t = \tau$ with positive probability (the coefficients of the equation are said to satisfy the condition (H) if there exist closed sets

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SOV/52-3-4-5/11

Diffusion Processes and Elliptic Equations Degenerating at the Boundary of the Region

Γ_0^1 and Γ_0^2 such that $\Gamma_0^1 \cup \Gamma_0^2 = \Gamma_0$ (Γ_0 is a segment of the x_1-axis forming part of the boundary of the region) and $a_{11}(x) > k > 0$, $b_1(x)$ is bounded for $x \in U_{\Gamma_0^1}$; $b_1(x)$ has constant sign $x \in U_{\Gamma_0^2}$).

Finally, examples are discussed which show that theorems 2.1, 2.2, 3.1 and 3.2 give conditions for the various types of boundaries which are close to the necessary and sufficient conditions. There are 20 references, 1 of which is German, 2 English, 15 Soviet and 2 others.

SUBMITTED: April 18, 1958

Card 3/3

KHAS'MINSKIY, R.Z., Cand Phys Math Sci -- (diss) "Certain problems in the theory of diffusion processes." Mos, 1959, 8 pp including cover (Mos State Univ im M.V. Lomonosov) 150 copies. Mimeographed. (KL, 36-59, 112)

16(1)

AUTHOR: Khas'minskiy, R.Z.

SOV/52-4-3-6/10

TITLE: On Positive Solutions of the Equation $\mathfrak{A}u + Vu = 0$

PERIODICAL: Teoriya veroyatnostey i yeye primeneniye, 1959, Vol 4, Nr 3, pp 332-341 (USSR)

ABSTRACT: The author uses notions and notations of [Ref 1]. Let $X = (X_t, \tau, M_t, P_x, \theta_t)$ be a strong Markov process with continuous trajectories in the domain D of a metric space. Let $\mathfrak{A}$ be the extended infinitesimal operator of the process X in the sense of Dynkin. Let the boundary Γ of D be reached for the first time in the moment τ. Here let $D \cup \Gamma$ be compact and $M_x \tau \leq c < \infty$ for all $x \in I$. Let the boundary Γ be regular in so far as

(1) $$P_x \left\{ X_\tau \in U_{x_0} \right\} \to 1$$

holds for $x \to x_0$ for every neighborhood U_{x_0} and all $x_0 \in \Gamma$. Let $V(x)$ be a continuous, nonnegative function in D. The author considers the existence of a finite mathematic expectation of the random variable $\zeta = \exp \left\{ \int_0^\tau V(X_t) dt \right\}$.

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On Positive Solutions of the Equation $\mathfrak{A}u + Vu = 0$ SOV/52-4-3-6/10

Theorem 1: If $u(x) = M_x \zeta$ is finite for all $x \in D$, then it satisfies the integral equation

$$(4) \qquad u(x) = M_x \int_0^{\tau} V(X_t)u(X_t)dt + 1.$$

If X is a strong Feller process, then u(x) satisfies the equation

$$(2) \qquad \mathfrak{A}u + V \cdot u = 0$$

with the boundary condition

$$(5) \qquad u\big|_{\Gamma} = 1.$$

In further theorems the author considers only strong Feller processes. It is shown that for the existence of a finite $M_x \zeta$ it is necessary and sufficient that (2) has a positive solution continuous in $D \cup \Gamma$. The author gives several conditions for the existence of such a solution. For processes described by differential equations it is shown

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that from the existence of a positive solution of (2) in domains D_1 and D_2 being free of intersections there follows the existence of such a solution in a simply connected domain containing D_1 and D_2. This result is used in order to prove the stability of the greatest eigenvalue of the elliptic operator $\mathfrak{A}u + Vu$ $(u|_{\Gamma} = 0)$ with respect to non-local changes of domains.

The author thanks Ye.B.Dynkin for advice.

There are 5 references, 4 of which are Soviet and 1 Hungarian.

SUBMITTED: January 3, 1959

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721910012-8"

KHAS'MINSKIY, R.Z. (Moscow)

Ergodic properties of recurrent diffusion processes and stabilization of the solutions to the Cauchy problem for parabolic equations. Teor. veroiat. i ee prim. 5 no.2:196-214 '60.
(MIRA 13:9)

(Equations)
(Probabilities)

23582

16.6100

S/052/61/006/001/004/005
C 111/ C 333

AUTHOR: Khas'minskiy, R. Z.

TITLE: On limit distributions for sums of conditionally independent random variables

PERIODICAL: Teoriya veroyatnostey i yeye primeneniye, v. 6, no. 1, 1961, 119-125

TEXT: Let $X = (X_0, X_1, \ldots)$ be a homogeneous Markov chain in the measurable space $(D, \mathfrak{B})$, where $\mathfrak{B}$ is the σ-algebra of the subsets of D. Let B be an event which is measurable relative to $X_0, X_1, \ldots$; $A \in \mathfrak{B}$. Let denote

$$\mathbf{P}_x(B) = P\{B \mid X_0 = x\}; \; P^{(n)}(x,A) = \mathbf{P}_x\{X_n \in A\}; \; P^{(1)}(x,A) = P(x,A).$$

$\{\eta_n\}$ is called a sequence of conditionally independent random variables connected with the chain X, if for all n

$$\mathbf{P}\{\eta_1 < z_1, \eta_2 < z_2, \ldots, \eta_n < z_n \mid X_0, X_1, \ldots, X_n\} =$$

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On limit distributions for sums ... S/052/61/006/001/004/005
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$$= \mathbf{P}\{\eta_1 < z_1 \mid X_o, X_1\} \cdot \mathbf{P}\{\eta_2 < z_2 \mid X_o, X_1, X_2\} \cdot \ldots$$
$$\ldots \cdot \mathbf{P}\{\eta_n < z_n \mid X_o, X_1, \ldots, X_n\} \qquad (1)$$

is satisfied. The sequence $\{\eta_n\}$ of random variables conditionally independent in the above sense is assumed to satisfy the hypothesis A, if there exists a positive integer N such that for $n > N$ the functions $F(z \mid x_o, \ldots, x_n)$ depend only on the last N arguments, i. e.

$$F(z \mid x_o, \ldots, x_n) = F^{(n)}(z \mid x_{n-N+1}, \ldots, x_n) .$$

Assume that the hypothesis A is satisfied for N = 2. Let denote:

$$M\{e^{it\eta_n} \mid X_o = x_o, \ldots, X_n = x_n\} = \begin{cases} \varphi(t \mid x_o, \ldots, x_n) & \text{for } n < N \\ \varphi^{(n)}(t \mid x_{n-N+1}, \ldots, x_n), & \text{for } n > N \end{cases}$$

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Let $\zeta_n = \eta_1 + \dots + \eta_n$.

Theorem 1: Let N = 2 and hypothesis A be satisfied. Furthermore, assume:

1.) the Markov chain is uniformly ergodic (i. e. $P^{(n)}(x,A) \to P(A)(u \to \infty)$ uniform relative to $x \in D$ and $A \in \mathfrak{M}$);

2.) for a certain $\alpha (0 < \alpha \leq 2, \alpha \neq 1)$ it holds

$$\varphi^{(k)}(t/x,y) = \begin{cases} 1 + i\gamma_k(x,y)t + c_k(x,y)t^{\alpha} + \psi_1^{(k)}(t,x,y), & \text{for } t > 0 \\ 1 + i\gamma_k(x,y)t + \bar{c}_k(x,y)|t|^{\alpha} + \psi_2^{(k)}(t,x,y), & \text{for } t < 0 \end{cases} \quad (3)$$

where $\gamma_k \equiv 0$ for $\alpha < 1$ and $\psi_i^{(k)} = o(|t|^{\alpha})$ $t \to 0$ uniform relative to $x,y \in D$ and $k = 1,2,\dots$

3.) For almost all x,y there exists in the measure $\tilde{P}(dx)\, P(x,dy)$

$$\lim_{n\to\infty} \frac{1}{n} \sum_{i=1}^{n} c_i(x,y) = c(x,y)$$

4.) for $x, y \in D$ it holds

$$|c_i(x,y)| \leq c < +\infty \quad (i = 1,2,\ldots).$$

Then for $n \to \infty$ the probability

$$P\{(\xi_n - A_n)n^{-1/\alpha} < z\}$$

tends uniformly relative to the initial distribution to the function of the stable distribution $G_\alpha(z)$, the characteristic function of which has the form $f(t) = \exp\{(a' + ib' \cdot \operatorname{sgn} t\,|t|^\alpha\}$, where $A_n = M\xi_n$ for $\alpha > 1$ and $A_n = 0$ for $\alpha < 1$ and

$$a = a' + ib' = \int_D P(dx) \int_D c(x,y)\; P\,(x,dy).$$

Let the Markov process on the straight line $-\infty < x < +\infty$ be described by the equation

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On limit distributions for sums ...

$$\frac{\partial u}{\partial t} = a(x) \quad \frac{\partial^2 u}{\partial x^2} \quad .$$

Let f(x) be a bounded, piecewise continuous function.

Theorem 2: If

$$\int_0^{\infty} \frac{dx}{a(x)} \int_0^{x} dy \int_y^{\infty} \frac{dz}{a(z)} < +\infty \text{ u } \int_{-\infty}^{0} \frac{dx}{a(x)} \int_x^{0} dy \int_{-\infty}^{y} \frac{dz}{a(z)} < +\infty$$

then for $T \to \infty$ (7)

$$P\left\{\frac{1}{c_2\sqrt{T}}\left[\int_0^T f(X_s)ds - c_1T\right] < x\right\} \to \phi(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{x} e^{-\frac{1}{2}u^2} du \qquad (8)$$

where (7) is the necessary condition that (8) holds for every bounded function f(x).

Theorem 3. If:

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On limit distributions for sums ...

1.) the solutions of the equation

$$\frac{d^2 z_u}{dx^2} - \frac{u}{a(x)} z_u = 0 \qquad (9)$$

with the boundary conditions $z_u^{(1)}(0) = 1$ and $z_u^{(1)}(x) < 1$ for $x > 0$ as well as $z_u^{(2)}(0) = 1$ and $z_u^{(2)}(x) < 1$ for $x < 0$ admit for $u \to 0$ the representation

$$z_u^{(i)}(0) = 1 + a_i u + b_i u^{\alpha} h\left(\frac{1}{u}\right) + O\left[u^{\alpha} h\left(\frac{1}{u}\right)\right] \quad (i = 1,2)$$

where $0 < \alpha < 2$ ($\alpha \neq 1$). a_i and b_i -- constants ($a_1 = a_2 = 0$ for $\alpha < 1$, $b_1^2 + b_2^2 > 0$) and $h(x)$ is a slowly variable function (i.e. for every $k > 0$ it is $h(kx)/h(x) \to 1$ for $x \to +\infty$);

2.) $f(x)$ is so that $J = \int\left[|f(x)| / a(x)\right] dx < +\infty$, $d = \int\left[f(x)/a(x)\right] dx \neq 0$, where

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On limit distributions for sums ... S/052/61/006/001/004/005
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$\int \left[|xf(x)|/a(x) \right] dx < +\infty$ for $\alpha < 1$ (the integration is carried out over the whole real line).

Then for an arbitrary initial distribution of the probabilities it holds for $T \to \infty$:

$$P\left\{ \frac{1}{b(T)} \left[\int_0^T f(X_s)ds - cT \right] < x \right\} \to \begin{cases} 1-G_\alpha(-x), & \text{for } 1 < \alpha < 2 \\ 1-G_\alpha(x^{-1/2}), & \text{for } 0 < \alpha < 1 \end{cases},$$

where $G_\alpha(x)$ is the function of the stable distribution with the parameters α and $\beta = -1$; see B. V. Gnedenko and A. N. Kolmogorov (Ref. 13: Predel'nyye raspredeleniya dlya summ nezavisimykh sluchaynykh velichin [Limit distributions for sums of independent random variables], M.-L., 1949); for $0 < \alpha < 1$ it is $c = 0$.

The author mentions R. L. Dobrushin. He thanks Ye. B. Dynkin and A.N. Kolmogorov for advices.

Card 7/8

23582

On limit distributions for sums ... S/052/61/006/001/004/005
C 111/ C 333

There are 7 Soviet-bloc and 6 non-Soviet-bloc references. The four references to English-language publications read as follows: Kallianpur and Robbins, Ergodic property of the Brownian motion process, Proc. Nat. Acad. Sci. USA, 39, 6 (1953), 625-633; D. Darling and M.Kac, On occupation times for Markoff processes, Trans. Amer. Math. Soc., 84, 2 (1957), 444-458; W. Feller, Diffusion processes in one dimension, Trans. Amer. Math. Soc. 77, (1954), 1-31; W. Feller, Fluctuation theory of recurrent event, Trans. Amer. Math. Soc., 67, 1 (1949), 98-119.

SUBMITTED: June 18, 1959

Card 8/8

KHAS'MINSKIY, R. Z. (Moscow)

Limit distributions for sums of conditionally independent random variables. Teor. veroiat. i ee prim. 6 no.1:119-125 '61. (MIRA 14:6)

(Distribution (Probability theory))

34744

16.3500 11 4100

S/020/62/142/003/009/027
C111/C333

AUTHOR: Khas'minskiy, R.Z.

TITLE: Certain differential equations involved in the study of oscillations with small random perturbations

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 3, 1962, 560-563

TEXT: If one considers oscillation systems with random perturbations and if one investigates the behavior of solutions for perturbations tending to zero, then one meets differential equations which contain a small parameter ϵ on their highest derivatives. The author investigates two kinds of such differential equations.

Let $L_1(x)$ be an elliptic operator in $\bar{K}$, where $\bar{K} = K \cup \Gamma$; $\Gamma = \Gamma_1 \cup \Gamma_2$;

$\Gamma_i = \{x : x_1 = r_i\}$. Let $L_2(x) = A(x) \frac{\partial^2}{\partial x_2^2} + B(x) \frac{\partial}{\partial x_2}$ $(A > a_0 > 0$ in $K)$.

Let the coefficients of L_1 and L_2 be twice continously differentiable in K, where the first derivatives are assumed to be continuous in $\bar{K}$. Let V and F be twice continuously differentiable complex-valued functions ;

Card 1/4

Re $V(x) = V_1(x) \leq 0$; let f_i $(i = 1,2)$ be continuous and complex-valued on Γ_i. Let $\mu(x_1^0, x_2)$ denote the density of the invariant measure of the random Markov process corresponding to the operator L_2 on the circle $1_{x_1^0} = \left\{ x : x_1 = x_1^0 \right\}$. For every integrable $g(x)$ let $\tilde{g}(x_1) = \int_0^1 g(x_1, x_2)\mu(x_1, x_2)dx_2$.

Theorem 1 : The solution $u_\varepsilon(x)$ of the equation

$$\left(L_1 + V + \frac{1}{\varepsilon} L_2\right) u = - F \tag{2}$$

in K which satisfies the condition

$$u_\varepsilon (r_i, x_2) = f_i(x_2) \tag{1'}$$

converges for $\varepsilon \to 0$ to the solution $u_0(x_1)$ of the equation

Card 3/4 S/020/62/142/003/009/027
Certain differential equations involved .. C111/C333

$$\left[\tilde{L}_1(x_1) + \tilde{V}(x_1)\right] u_o = - \tilde{F}(x_1) \qquad (3)$$

corresponding to the condition

$$u_0(r_i) = \frac{\int_0^1 a_{11}(r_i, x_2)\,\mu(r_i, x_2)\,f_i(x_2)\,dx_2}{\int_0^1 a_{11}(r_i, x_2)\,\mu(r_i, x_2)\,dx_2} = \hat{f}_i \quad (i = 1, 2). \qquad (3')$$

In every closed subdomain of K it is moreover uniformly $u_\varepsilon(x) - u_o(x_1) = \mathcal{O}(\sqrt{\varepsilon})$. If $f_1(x_2)$ = const, then $u_\varepsilon(x) - u_o(x_1) = \mathcal{O}(\varepsilon)$ is uniformly in K.

Now, let $L_1 = L_1(x,t)$, $V = V(x,t)$, $F = F(x,t)$ $(0 \leq t \leq T)$ be twice differentiable in $K \times (0,T)$ with respect to all arguments.

Theorem 2 : The solution $u_\varepsilon(x,t)$ of the equation

$\frac{\partial u}{\partial t} = L_1(x,t)u + V(x,t)u + \frac{1}{\varepsilon} L_2(x)u + F(x,t)$ in $K \times (0,T)$ which satisfies the conditions $u_\varepsilon(x_1, x_2, 0) = f(x_1, x_2)$, $u_\varepsilon(r_1, x_2, t) = f_1(x_2, t)$

16,6100

36907
S/020/62/143/005/003/018
B112/B102

AUTHOR: Khas'minskiy, R. Z.

TITLE: An estimate of the solution of a parabolic equation and some of its applications

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 5, 1962, 1060-1063

TEXT: An estimation of the solution $u(x,s)$ of the equation

$$\partial u/\partial s = \sum_{i,j=1}^{N} a_{ij}(x,s)\partial^2 u/\partial x_i \partial x_j + \sum_{i=1}^{N} b_i(x,s)\partial u/\partial x_i + c(x,s)u + F(x,s)$$

$$= L(x,s)u + F(x,s)$$

is applied to the investigation of the solutions of equations of the form

$$\partial u/\partial s = \varepsilon\left[L(x,s)u + F(x,s)\right] + \sum_{i=1}^{N} A_i(x)\partial u/\partial x_i$$

and of the asymptotic behavior of the invariant measure of a Markov process with weak diffusion.

Card 1/2

An estimate of the solution of... S/020/62/143/005/003/018
B112/B102

ASSOCIATION: Moskovskiy lesotekhnicheskiy institut (Moscow Forestry-Engineering Institute)

PRESENTED: November 23, 1961, by A. N. Kolmogorov, Academician

SUBMITTED: November 23, 1961

Card 2/2

16.3500

L0178
S/020/62/145/005/003/020
B112/B104

AUTHORS: Il'in, A. M., and Khas'minskiy, R. Z.

TITLE: Ergodic property of inhomogeneous diffusion processes

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 5, 1962, 986-988

TEXT: The operator $L(t,x) = \sum_{i,j=1}^{N} a_{ij}(t,x)\partial^2/\partial x_i \partial x_j + \sum_{i=1}^{N} b_i(t,x)\partial/\partial x_i$ is considered under the assumption that the following conditions are fulfilled: $\sum_{i,j=1}^{N} a_{ij}(t,x)\xi_i \xi_j \geqslant \gamma(x)\sum_{i=1}^{N}\xi_i^2$; $|a_{ij}(t,x)| \leqslant M(r^2 + 1)$, $|b_i(t,x)| < M(r + 1)$, $r^2 = |x|^2$. The operator $L(t,x)$ is connected with a Markovian process $X(t,\omega)$ whose density $p(s,x,t,y)$ of the transition probability can be regarded as Green's function of the equations $\partial u/\partial s + L(s,x)u = 0$, $\partial u/\partial t = L^*(t,y)u$. It is demonstrated that the limit $\lim_{s\to-\infty} p(s,x,t,y) = p(t,y) > C$ exists if the coefficients of L satisfy the

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condition $\sum_{i=1}^{N}\left[a_{ii}(t,x) + b_i(t,x)x_i\right] < -\delta < 0$ for $r > r_1$. The solution $u(t,y)$ of Cauchy's problem $\partial u/\partial t = L^*(t,y)u$, $u(s,y) = u_0(y)$ $(t \geqslant s)$ is shown to have the following properties if $p(s,x,s+1,y) < M$: $u(t,y) - p(t,y)\int_{E_N} u_0(y)dy$ tends to zero uniformly in each compact subspace $K \subset E_N$ for $t \to \infty$ if $\int_{E_N} |u_0(y)|dy$ converges. $\int_{E_N} u_0(y)dy =$ implies $u(t,y) \to \infty$ for $t \to \infty$.

PRESENTED: March 22, 1962, by I. G. Petrovskiy, Academician

SUBMITTED: March 20, 1962

Card 2/2

KHAS'MINSKIY, R.Z.

Evaluation of the solution to a parabolic equation and some of its applications. Dokl. AN SSSR 143 no.5:1060-1063 Ap '62. (MIRA 15:4)

1. Moskovskiy lesotekhnicheskiy institut. Predstavleno akademikom A.N.Kolmogorovym.

(Differential equations, Partial)

IL'IN, A.M.; KHAS'MINSKIY, R.Z.

Ergodic nature of inhomogeneous diffusion processes. Dokl.AN SSSR 145 no.5:986-988 '62. (MIRA 15:8)

1. Predstavleno akademikom I.G.Petrovskim.
(Probabilities)

KHAS'MINSKIY, R.Z. (Moskva)

Stability of the trajectory of Markov processes. Prikl. mat. i mekh. 26 no.6:1025-1032 N-D '62. (MIRA 16:1)
(Markov processes)

S/052/63/008/001/001/005
B112/B186

AUTHOR: Khas'minskiy, R. Z. (Moscow)

TITLE: Principle of averaging for parabolic and elliptic differential equations and for Markov processes with small diffusion

PERIODICAL: Teoriya veroyatnostey i yeye primeneniya, v. 8, no. 1, 1963, 3 - 25

TEXT: N. N. Bogolyubov (O nekotorykh statisticheskikh metodakh v matematicheskoy fizike - Certain statistical methods in mathematical physics. Izd-vo AN USSR, 1945) formulated the following general principle of averaging: the solution $y(t)$ of the equation $dy/dt = \varepsilon X_0(y)$, where

$$X_0(x) = \lim_{T\to\infty} (1/T)\int_0^T X(t,x)dt,$$

approximates the solution $x(t)$ of the equation $dx/dt = \varepsilon X(t,x)$ with arbitrary accuracy when $\varepsilon \to 0$. In the present paper this principle is applied to parabolic equations. The theorem of the convergence of an invariant measure of a Markov process on a torus to an invariant measure of the flow

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Principle of averaging for...

S/052/63/008/001/001/005
B112/B186

on a torus is derived.

SUBMITTED: June 30, 1961

Card 2/2

IL'IN, A.M.; KHAS'MINSKIY, R.Z. (Moskva)

Asymptotic behavior of solutions to parabolic equations and the ergodic property of inhomogeneous diffusion processes. Mat. sbor. 60 no.3:366-392 Mr '63. (MIRA 16:3)
(Differential equations) (Markov processes)

KHAS'MINSKIY, R.Z. (Moskva)

Effect of low-intensity noise on the operation of a self-oscillating system. Prikl. mat. i mekh. 27 no.4:683-688 Jl-Ag '63. (MIRA 16:9)

(Oscillations)

[illegible] the Sixth Conference [illegible]

[illegible]minskiy, H. Z. Probability Representation of the [illegible] [illegible] Differential [illegible]

[illegible], I. D. Transformation of Kolmogorov's Equations [illegible]bility of Markov Processes [illegible]

[illegible] Markov [illegible]

[illegible]MATION [illegible]

[illegible]

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721910012-8"

KHAS'MINSKIY, R.Z. (Moscow)

Principle of averaging for parabolic and elliptic differential equations and Markov processes with small diffusion. Teor. veroiat. i ee prim. 8 no.1:3-25 '63. (MIRA 16:3)

(Differential equations) (Markov processes)

L 18092-63 EWT(1)/BDS AFFTC/ASD
ACCESSION NR: AP3004114 S/0040/63/027/004/0683/0688

51

AUTHOR: Khas'minskiy, R. Z. (Moscow)

TITLE: Performance of an auto-oscillating system under the effect of small noise

21

SOURCE: Prikladnaya matematika i mekhanika, v. 27, no. 4, 1963, 683-688

TOPIC TAGS: white noise, Markov process, stationary distribution, principle of averaging, oscillating system

ABSTRACT: The author considers the performance of the auto-oscillating system governed by $X'' + \omega^2 X - \varepsilon f(X,X') = \mu \xi'(t)$ (0.1) for small ε and μ, where $\xi'(t)$ is a white noise process. He studies the Markov process $(X(t), X'(t))$ determined by (0.1) for various assumptions on the order of the variable $\mu/\sqrt{\varepsilon}$. He studies the behavior of the transition probability density of this process in his second section and its stationary distribution in his third section. In particular he shows that if $\mu/\sqrt{\varepsilon} << 1$ the white noise can be neglected when considering the stationary behavior of auto-oscillations. Basic attention is paid to the case $\mu/\sqrt{\varepsilon} \sim 1$ in which case it is shown that the stationary probability distribution has a limit as $\varepsilon \to 0$. This limit is found. In his fourth section he computes the

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L 18092-63
ACCESSION NR: AP3004114

0

effective frequency of the oscillations with accuracy up to $o(\varepsilon)$. The results are then applied to the Van Der Pohl case, where the stationary distribution turns out to be Gaussian. He notes that the methods developed are suitable for studying the effect of random noise on much more general systems, even in higher dimensions which are conservative for the small parameter $\varepsilon = 0$. Orig. art. has: 24 formulas.

ASSOCIATION: none

SUBMITTED: 25Jan63 DATE ACQ: 15Aug63 ENCL: 00

SUB CODE: MM NO REF SOV: 007 OTHER: 002

Card 2/2

KHAS'MINSKIY, R.Z.

Small-parameter diffusion processes. Izv. AN SSSR. Ser. mat, 27 no.6:1281-1300 N-D '63. (MIRA 17:1)

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721910012-8"

KHAS'MINSKY, R. Z. (Moscow)

"On the operation of the Hamiltonian system with small friction and small random noise".

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 January - 5 February 1964

AP4045069

Khas'minskiy

Brownian motion

process

of a particle

with [illegible]

particles [illegible]

the viscosity [illegible] temperature

medium is constant, [illegible]

the Brownian [illegible]

presented, [illegible]

of the [illegible]

is a [illegible]

Fokker-Planck [illegible]

solution of [illegible]

The asymptotic [illegible]

various assumptions [illegible]

[illegible]

EWT(d) IJP(c) GS

AT6004690 SOURCE CODE: UR/... .../0085

AUTHOR: Khas'minskiy, R. Z.

ORG: none

TITLE: On stability of systems under steadily acting random disturbances

SOURCE: AN SSSR. Institut problem peredachi informatsii. Opoznaniye obrazov. Teoriya peredachi informatsii (Pattern recognition. Theory of information transmission). Moscow, Izd-vo Nauka, 1965, 72-85

TOPIC TAGS: dynamic system stability, asymptotic stability, Lyapunov stability, A stability

16,44,55

ABSTRACT: Stability of a dynamic system described by the following differential equation in vector form:

$$\frac{dx}{dt} = F(x, t) \text{ where } x = (x_1, \ldots, x_n);\ F = (F_1, \ldots, F_n), \quad (1)$$

under steadily acting random disturbances of the "white noise" type is analyzed with the assumptions that the origin of coordinates is the state of equilibrium (that is, $F(0, t) = 0$) and the functions

Card 1/2

L 17004-66

ACC NR: AT6004690

$F_1, \ldots, F_n$ are continuous with respect to their arguments and satisfy the Lipschitz condition. The reasons why the ordinary concept of [illegible] stability is not sufficient and new concepts of stability [illegible] introduced are explained. Three definitions of the stability [illegible] of system (1) at x = [illegible] are formulated: [illegible] locally weak [illegible]stability; 2) globally weak A-stability; and [illegible] locally strong [illegible]stability; some properties of such A-stable systems are analyzed. [illegible] theorems are proved to establish sufficient conditions for system (1) [illegible] stable in the defined sense. Since fulfillment of derived [illegible] criteria are difficult to verify in many cases, A-stability [illegible] in terms of Lyapunov's function are [illegible] and proved. [illegible] shown that asymptotic stability of system [illegible] is not a sufficient [illegible] for that system to be weakly A-stable. When system (1) is [illegible], asymptotic stability is a sufficient condition for that system [illegible] weakly A-stable. Orig. art. has: [illegible] formulas. [LK]

SUB CODE: 12/ SUBM DATE: 25Sep65/ ORIG REF: 010/ OTH REF: 002
ATD PRESS: 4207

L 05952-66 EWT(1) IJP(c)

AP6004986 SOURCE CODE: UR 0406 65 001/001/0088/0104

Khas minskiy, R. Z.

ORG: none

The degree of dissipation of random processes defined by differential equations

Problemy peredachi informatsii, v. 1, no. 1, 1965, 88-104

TAGS: random process, differential equation, probability, Euclidean space

The author studies several properties at $t \to \infty$ of random processes $X(t, \omega)$, solutions to the equation in the n-dimensional Euclidean space E_n

$$\frac{dx}{dt} = F(x, t) + \xi(t, \omega), \qquad (0.1)$$

$\xi(t, \omega)$ is an n-dimensional random process. Equations of this type occur, for in investigations of the reaction of a nonlinear system to a random input signal ... without any special ... the following properties of eq. (0.1)

Card 1/3 UDC: 519.27

L 23932-66

ACC NR: AP6004988

[illegible] of dissipation of the process $X(t, \omega)$, [illegible] uniformly probability [illegible] quantities $X(t, \omega)$ [illegible]

[illegible] the existence of a stationary, as well as of a periodic solution of the system (0.1) in [illegible] distinctly independent or depends periodically on t and [illegible] [illegible] the system

$$\frac{dx}{dt} = F(x, t) \qquad (0.2)$$

[illegible] small

$$|X(t_0)| + \sup_{t \geq t_0} M|\xi(t, \omega)|.$$

[illegible] conditions for the fulfillment of the properties studied are formulated in terms [illegible] Lyapunov functions. Some [illegible] the more [illegible]

$$\frac{dx}{dt} = G(x, t, \xi(t, \omega)). \qquad (0.3)$$

Card 2/3

L 23982-66

ACC NR: AP6004988

Orig. art. has: 68 formulas.

SUB CODE: 12 / SUBM DATE: 12Nov64 / ORIG REF: 018 / OTH REF: 001

Card 3/3 FV

KHAS'MINSKIY, R.Z.

Application of random noise in optimization and recognition problems. Probl. pered. inform. 1 no.3:113-117 '65.
(MIRA 18:11)

L 25232-66 EWT(d) IJP(c) SOURCE CODE: UR/0040/66/030/002/0404/0409

AUTHOR: Nevel'son, M. B. (Moscow); Khas'minskiy, R. Z. (Moscow)

ORG: none

TITLE: Stability of a linear system with random perturbations of its parameters

SOURCE: Prikladnaya matematika i mekhanika, v. 30, no. 2, 1966, 404-409

TOPIC TAGS: linear system, linear differential equation, mathematic determinant, white noise, stochastic process, perturbation,

ABSTRACT: The problem of the stability of a system that is described by an equation of the n-th order with random coefficients is considered. Necessary and sufficient conditions of mean square asymptotic stability, which convert to the Routh-Hurwitz conditions in the absence of noise, are obtained. A determinant system described by a linear differential equation of order n with constant coefficients

$$y^{(n)} + a_1 y^{(n-1)} + \ldots + a_n y = 0$$

is examined. In the presence of "white noise" type random forces, it converts to a stochastic differential equation

$$y^{(n)} + [a_1 + \eta_1(t)] y^{(n-1)} + \ldots + [a_n + \eta_n(t)] y = 0 .$$

Necessary and sufficient conditions for the system written in the form

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721910012-8"

L 25992-66

ACC NR: AP6012560

$$dX_1 = X_2\,dt,\quad dX_2 = X_3\,dt, \ldots \quad dX_{n-1} = X_n\,dt$$

$$dX_n = -\sum_{i=1}^{n} a_i X_{n-i+1}\,dt - \sum_{i,j=1}^{n} a_{ij} X_{n-i+1}\,d\xi_j(t)$$

f... ... the mean square stability are obtained. Further sufficient conditions are ... f... for systems having asymptotic p-stability with p > 2. Orig. art. has: 45 formulas.

... ... / SUBM DATE: 23Aug65/ ORIG REF: 007/ OTH REF: 003

L 33241-66 EWT(1) JM

ACC NR: AP6005868 SOURCE CODE: UR/0406/65/001/003/0113/0117

55
52
B

AUTHOR: Khas'minskiy, R. Z.

ORG: None

TITLE: Application of random noise in optimization and recognition problems

21

SOURCE: Problemy peredachi informatsii, v. 1, no. 3, 1965, 113-117

TOPIC TAGS: random noise signal, recognition process, optimization, analog computer, digital computer

ABSTRACT: In this note, the author investigates the operations of an optimizing device with a random noise, assuming that the introduction of noise into a system does not require much time. Apparently, this is the case with the introduction of noise into analog devices, and the opposite holds true with the introduction of a random process into a digital computer, which requires a long interval of time due to the simulation of this process, which makes the applica- tion of the algorithm presented in the note inefficient. The main principle of the method pro- posed is explained schematically. The present article investigates the behavior of the solution of the equation

$$\frac{dx}{dt} = \mathrm{grad}\, f(x) + \sigma\xi(t), \qquad (1)$$

where $(t) = (_1(t), \ldots, _n(t))$ is the generalized random process of "white noise" of power n, i.e., a process the integral of which $(t) - (0)$ is equal to the accrement of the n-dimensional Wiener random process, so that $M[\xi(t) - \xi(0)] = 0; \quad D(\xi_i(t) - \xi_i(0)) = t \quad (i = 1, \ldots n).$ (2)

UDC 621.391.18

Card 1/2

L 33241-66

ACC NR: AP6005868

3

In conclusion, the author expresses his gratitude to V. Pereverzev-Orlov, M. S. Pinsker, and D. B. Yudin for useful discussions. Orig. art. has: 13 formulas.

SUB CODE: 09 / SUBM DATE: 21Apr65 / ORIG REF: 002 / OTH REF: 001

Card 2/2

L 43726-66 EWT(d) IJP(c)

ACC NR: AP6019523 SOURCE CODE: UR/0020/66/168/004/0755/0758

22B

AUTHOR: Khas'minskiy, R. Z.

ORG: Institute of Problems of Informatio. Transmission, Academy of Sciences SSSR (Institut problem peredachi informatsii Akademii nauk SSSR)

TITLE: Certain limiting theorems for solving differential equations with a random right-hand side

SOURCE: AN SSSR. Doklady, v. 168, no. 4, 1966, 755-758

TOPIC TAGS: differential equation solution, random process, Euclidean space

ABSTRACT: In many physical and, in particular, radio engineering problems it is of interest to study random processes which are solutions of differential equations, the right-hand member of which includes an event. In this case, it is often possible to distinguish in the right-side of the equation a small parameter ε which can characterize the smallness of the random action, its "correlation time". The asymptotic behavior of such random processes when $\varepsilon \to 0$ is examined in this article. It is assumed that $F(x, t, \omega, \varepsilon)$ is a function with values of an 1-dimensional Euclidean space E^l determined for $x \in E^l$, $t \geqslant 0$, $\omega \in \Omega$, $\varepsilon \geqslant 0$; here Ω is a space of elementary events, for the σ-algebra of $\mathfrak{A}$ measurable sets of which

 UDC: 519.27+517.91

L 43726-66

ACC NR: AP6019523

the probability measure P is prescribed. It is assumed that F(x, t, ω, ε) at fixed x, ε is a random process measurable with respect to t, ω and satisfies the Lipschitz condition

$$|F(x_2, t, \omega, \varepsilon) - F(x_1, t, \omega, \varepsilon)| < L|x_2 - x_1| \qquad (1)$$

and for all t > 0 the condition

$$P\left\{\int_0^t |F(0, s, \omega)|\,ds < \infty\right\} = 1. \qquad (2)$$

When these requirements are met, the problem

$$dx/dt = \varepsilon F(x, t, \omega, \varepsilon); \quad x(0) = x_0, \qquad (3)$$

has a random process x_ε (t, ω) continuous with probability 1 as a unique solution. The paper was presented by Academician Kolmogorov, A. N., 14 Sep 65. Orig. art. has: 11 formulas.

SUB CODE: 09,12/ SUBM DATE: 10Sep65/ ORIG REF: 007

Card 2/2 hs

L 06219-67 EWT(d) IJP(c)

ACC NR: AP6028425 SOURCE CODE: UR/0052/66/011/002/0240/0259

AUTHOR: Khas'minskiy, R. Z.

34
B

ORG: none

TITLE: On random processes determined by differential equations with a small parameter

SOURCE: Teoriya veroyatnostey i yeye primeneniya, v. 11, no. 2, 1966, 240-259

TOPIC TAGS: differential equation, Markov process, random process, stochastic process, probability, mathematic space, Gaussian distribution, Green function, Fourier series

ABSTRACT: The author studies the behavior (when $\varepsilon \to 0$ over a time segment on the order of $O(1/\varepsilon)$) of the trajectory of a random process which can be determined by the differential equation

$$\frac{dx}{dt} = \varepsilon F(x, t, \omega); \quad x(0) = x_0,$$

where $(\Omega = \{\omega\}, \mathfrak{A}, \mathbf{P})$ is the probability space. If the function F satisfies the conditions

$$|F(x_2, t, \omega) - F(x_1, t, \omega)| < L|x_2 - x_1|$$

and

$$\mathbf{P}\left\{\int_0^t |F(0, s, \omega)|\, ds < \infty\right\} = 1,$$

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ACC NR: AP6028425

and if

$$\sup_{t_0>0} M\left|\frac{1}{T}\int_{t_0}^{t_0+T} F(x,t,\omega)\,dt - F(x)\right| \to 0 \quad (T\to\infty)$$

is satisfied for processes $F(x, t, \omega)$, then the solution $X_\varepsilon(\tau, \omega)$ of the problem

$$\frac{dx}{d\tau} = F(x, \tau/\varepsilon, \omega); \quad x_\varepsilon(0) = x_0$$

converges when $\varepsilon \to 0$ on the solution $x^0(\tau)$ of the problem

$$\frac{dx^0}{d\tau} = F(x^0); \quad x^0(0) = x_0$$

uniformly for $0 \le \tau \le \tau_0$, i.e., when $\varepsilon \to 0$

$$\sup_{0\le\tau\le\tau_0} M|X_\varepsilon(\tau,\omega) - x^0(\tau)| \to 0.$$

The set of functions $F(x, t, \omega) = (F_1(x, t, \omega), \ldots, F_l(x, t, \omega))$ satisfies the conditions

$$M|F(0,t,\omega)|^{4+3\delta} < N; \quad \left|\frac{\partial F}{\partial \tau}(x,t,\omega)\right| < N; \quad \left|\frac{\partial^2 F_i}{\partial x_j \partial x_k}\right| < N$$

$$(i, j, k = 1, \ldots, l; \delta > 0);$$

if uniformly over x, $t_0 > 0$, there exist the limits

$$\lim_{T\to\infty}\frac{1}{T}\int_{t_0}^{t_0+T} MF(x,t,\omega)\,dt = F(x),$$

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$$\lim_{T\to\infty}\frac{1}{T}\int_{t_0}^{t_0+T}\int_{t_0}^{t_0+T} ds\,dt\,M[F_k(x,s,\omega)-MF_k(x,s,\omega)]\times$$
$$\times[F_l(x,t,\omega)-MF_l(x,t,\omega)]=A_{kl}(x);$$

the set $\mathfrak{N}_s^t$ of σ-algebras of the sets of $\mathfrak{A}$ satisfies the conditions: $\mathfrak{N}_s\subset\mathfrak{A}$ for all s, t; $\mathfrak{N}_s^t\subset\mathfrak{N}_{s_1}^{t_1}$ if $s_1 \le s$ and $t \le t_1$; and the set $\mathfrak{N}_s^t$ satisfies the condition of strong intermixing; and for all $\tau (0 \le \tau \le \tau_0)$

$$\left|\int_0^{\tau}[MF(x^0(s),s/\varepsilon,\omega)-F(x^0(s))]\,ds\right|\leqslant c\varepsilon,$$

$$\left|\int_0^{\tau}\left[M\frac{\partial F_k}{\partial x_j}(x^0(s),s/\varepsilon,\omega)-\frac{\partial F_k}{\partial x_j}(x^0(s))\right]ds\right|\leqslant c\varepsilon_0$$

Then the process

$$Y^{(\varepsilon)}(\tau,\omega)=\frac{X^{(\varepsilon)}(\tau,\omega)-x^0(\tau)}{\sqrt{\varepsilon}}$$

when $\varepsilon \to 0$ converges weakly over the interval $[0, \tau_0]$ to a Gaussian Markov process $Y^{(0)}(\tau, \omega)$, which satisfies the system of linear equations

$$Y^{(0)}(\tau)=W^{(0)}(\tau)+\int_0^{\tau}\frac{\partial F}{\partial x}(x^0(s))\,Y^{(0)}(s)\,ds,$$

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where $W^{(0)}(\tau, \omega)$ is a Gaussian process with independent increments, a zero mathematical expectation, and the correlation matrix

$$\int_0^{\tau} A_{ij}(x^0(s))\,ds.$$

Orig. art. has: 72 formulas.

SUB CODE: 12/ SUBM DATE: 26Apr65/ ORIG REF: 018/ OTH REF: 003

Card 4/4

ACC NR: AP6034915 SOURCE CODE: UR/0406/66/002/003/0076/0091

AUTHORS: Nevel'son, M. B.; Khas'minskiy, R. Z.

ORG: none

TITLE: On the stability of stochastic systems

SOURCE: Problemy peredachi informatsii, v. 2, no. 3, 1966, 76-91

TOPIC TAGS: stochastic process, white noise, Markov process, asymptotic property, probability, linear system, mathematic matrix

ABSTRACT: This paper presents an investigation of signal properties at the output of a system whose parameters are subjected to random fluctuations of the "white noise" type. The conditions for p-stability are studied. The linear stochastic system

$$dX_i = \sum_{j=1}^{n} b_{ij}(t) X_j \, dt + \sum_{k,j=1}^{n} \sigma_{ij}^{(k)}(t) X_k \, d\xi_j(t)$$

is examined. Here $b_{ij}(t)$ and $\sigma_{ij}^{(k)}(t)$ are continuous and bounded at $t \geq t_0$ functions of time. It is shown that, with the exception of critical cases, the stability of the above output process $X(t)$ is determined by the stability of the linearized system (first approximation). Necessary and sufficient conditions for p-stability of stochastic systems are derived. It is shown that the p-stability of process $X(t)$ for any $p > 0$ assures stability in the presence of continuously acting disturbances. The process at the output of the system is found to be dissipative when the input signal has a finite mathematical expectation and the system itself is stable. Orig. art. has: 51 formulas.

SUB CODE: 20,09/ SUBM DATE: 21Aug65/ ORIG REF: 011/ OTH REF: 004 UDC: 519.27

BAUER, M.; KHASNOSH, T.; LISHSHAK, K.; MADARAS, I.

Modified method for the automatic registration of salivation. Fiziol. zhur. (Ukr.) 1 no.4:130-135 Jl-Ag '55. (MLRA 9:11)

1. Medichniy universitet, kafedra normal'noi fiziologii, m.Pech, Ugorshchina.
(SALIVATION,
registration, automatic method)

KHASPEKOV, G.M., dotsent; VOROB'YEVA, T.V.

Differential diagnosis of myelomatosis [with summary in English p. 64] Probl. gemat. i perel. krovi 2 no.1:54-55 Ja-F '57 (MLRA 10:4)

1. Iz 3-y kafedry rentgenologii (zav.-prof. I.L. Tager) i 3-y kafedry terapii (zav.-prof. I.A. Kassirskiy) TSentral'nogo instituta usovershenstvovaniya vrachey.
(MYELOMA, PLASMA CELL, differ. diag.)

KHASPEKOV, G.I.

PANCHENKOV, R.T., dotsent; KHASPEKOV, G.I., dotsent

Echinococcosis of the heart. Vest.khir. 78 no.1:101-102 Ja '57.
(MLRA 10:3)

1. Iz kafedry khirurgii (zav. kav. - prof. V.R.Braytsev)
TSentral'nogo instituta usovershenstvovaniya vrachey.
(HEART DISEASES, case report
echinococcosis)
(ECHINOCOCCOSIS, case reports
heart)

KHASPEKOV, G.E., dotsent (Moskva, I-128, pl.Yauza, d.6, kv.27)

X-ray diagnosis of Besnier-Boeck-Schaumann disease. Vest.rent.i rad. 36 no.3:41-45 My-Je '61. (MIRA 14:7)

1. Iz rentgenovskogo otdeleniya TSentral'nogo klinicheskoy bol'nitsy Ministerstva putey soobshcheniya imeni N.A.Semashko (nachal'nik A.A.Pòtsubeyenko).

(GRANULOMA BENIGNUM)

KHASPEKOV, N., starshiy leytenant

Communication between guard posts and guard house. Voen. vest. 39 no.7:80-81 Jl '59. (MIRA 12:10)
(Communications, Military)

KHASPOLATOV, A.S., inzhener.

Using blowdown water from boilers as feed water for evaporators in thermopower plants. Energetik 4 no.11:23 N '56. (MIRA 9:12)
(Feed water) (Evaporating appliances)

AUTHOR: Khaspolatov, A.S., Engineer SOV-91-58-4-9/29

TITLE: Automation of the Combustion Process in Gas Burning Boilers (Avtomatizatsiya protsessa goreniya v kotlakh pri szhiganii gaza)

PERIODICAL: Energetik, 1958, Nr 4, pp 10-11 (USSR)

ABSTRACT: Boilers of a "TETs" were designed for operation on pulverized coal fuel. The change conversion to gas required a modification of the sytem of combustion control and a "fuel-air" control system was adopted (see diagram). Since new controllers were not available, the existing "KRZM" type controllers of the Venyukovskiy Plant were rebuilt and transformed into "KIM" gas supply controllers. Tests carried out with these rebuilt controllers showed that their quality was better than plant controllers. Standard "KRV-O" and "KRR-O" type columns were used as controllers for the exhaust. Because of great fluctuations in gas pressure in the gas collector, a "KRTA-O" controller was rebuilt and transformed into the "KRD" type gas pressure controller which is utilized for the whole boiler-installation. The accuracy of control of the gas pressure attains $\pm$ 0.03 kg per sq cm. The gas pipelines of each boiler contain flap valves, which are connected by cable with the

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SOV-91-58-4-9/29

Automation of the Combustion Process in Gas Burning Boilers

"KIM" type controllers. The controlling process is described.
There is 1 diagram.

1. Boilers--Control systems

Card 2/2

AUTHOR: Khaspolatov, A.S., Engineer 91-58-8-5/34

TITLE: Decreasing the Number of Personnel in the TETs (Umen'-sheniye chislennosti personala na TETs)

PERIODICAL: Energetik, 1958, Nr 8, pp 12 (USSR)

ABSTRACT: Methods of automation and mechanization to decrease the number of personnel needed in a TETs are described.

1. Industrial plants--Control systems 2. Personnel--Reduction

Card 1/1

MA[illegible]SIMEN, S. A.

Automobiles- Trailers

My experience in hauling logs by truck. Les. prom. 12 no. 2:8-10 F '52.

Monthly List of Russian Accessions, Library of Congress, July 1952. UNCLASSIFIED.

YAKOVLEVA, O.S., kand.pedagogicheskikh nauk; GORDETSOVA, V.I., uchitel'nitsa shkoly (Leningrad); KHASSO, K.A., uchitel' shkoly (Leningrad); SOKOLOVA, I.N., uchitel'nitsa shkoly (Leningrad)

Biology lessons without homework. Biol.v shkole no.2:30-35 Mr-Ap '60. (MIRA 13:8)

1. Leningradskiy gosudarstvennyy pedagogicheskiy institut imeni A.I.Gertsena (for Yakovleva).
(Biology--Study and teaching)

NEKRASOV, T.K.; KHAST, D., redaktor; LAVRENT'YEVA, tekhnicheskiy redaktor

[Rural motion-picture operators] Sel'skie kinomekhaniki. Moskva, Gos. izd-vo kul'turno-prosvetitel'noi lit-ry, 1954. 19 p. [Microfilm] (MLRA 8:7)

(Motion-picture projection)

KHASUMSKI, M.

Method for straightenirg construction equipment and structures.

P. 51, (Transportno Delo), Vol. 9, no. 3, 1957, Sofia, Bulgaria

SO: Monthly Index of East European Acessions (EEAI) Vol. 6, No. 11 November 1957

KHASUVAROV, K.I.

Investigating the standard combined weight-spring and piston barometer. Izm.tekh. no.7:31-32 Jl '60. (MIRA 13:7)

(Barometer)